IN THE CLAIMS

For the convenience of the Examiner, all pending claims of the present Application are shown below.

1. (Withdrawn) A router comprising:

a star switching fabric operable to receive a plurality of optical signals each having a wavelength and each associated with a payload received by the router, the star switching fabric further operable to communicate from the switching fabric a plurality of substantially similar sets of the optical signals;

a plurality of tunable filters each having a configuration speed and each associated with a communication path coupled to one of a plurality of destination elements, wherein each filter is operable to receive one of the sets of optical signals from the switching fabric and to selectively tune to a wavelength of one of the plurality of optical signals received to facilitate communication of at least the payload associated with that optical signal toward the destination element associated with that filter; and

a plurality of line cards operable to facilitate generation of at least some of the optical signals for transmission to the star switching fabric, at least one of the plurality of line cards comprising a switching enhancer operable to increase the switching speed of the router without modifying the configuration speed of any of the tunable filters.

2. (Withdrawn) The router of Claim 1, wherein the switching enhancer comprises an aggregator operable to combine information from a plurality of packets associated with a common destination element into an aggregated frame.

3. (Withdrawn) The router of Claim 2, wherein each of the plurality of substantially similar sets of optical signals comprises a set of aggregated frames, each aggregated frame having a wavelength; and

wherein each of the tunable filters is operable to selectively tune to a wavelength of one of the plurality of aggregated frames to facilitate communication of all of the payloads associated with the selected aggregated frame toward the destination element associated with that filter.

4. (Withdrawn) The router of Claim 1, wherein the switching enhancer comprises an optical transmitter operable to receive an electrical signal representing a packet received by the line card having an original duration and to generate a packet representing the received packet but having a shortened duration compared to the original duration.

5. (Withdrawn) The router of Claim 1, wherein each of the plurality of optical signals received by the star switching fabric comprises an optical packet comprising a shortened duration; and

wherein the switching enhancer comprises an optical transmitter operable to receive an electrical signal representing a packet received by the line card having an original duration longer than the shortened duration, the optical transmitter operable to generate based on the electrical signal an optical signal having the shortened duration for transmission to the star switching fabric.

6. (Withdrawn) The router of Claim 1, wherein the switching enhancer comprises a plurality of tunable filters associated with a single output optical link from the router and operable to receive one of the sets of optical signals from the star switching fabric, and

wherein at least one of the plurality of tunable filters is operable to tune to a specified wavelength while another of the plurality of tunable filters processes a signal received from the star switching fabric having primarily a different wavelength from the specified wavelength.

7. (Withdrawn) The router of Claim 6, wherein the plurality of tunable filters comprises:

a first tunable filter tuned to a first selected wavelength and operable to process an optical signal having primarily the first selected wavelength; and

a second tunable filter operable to substantially complete tuning to a second selected wavelength before the first tunable filter completes processing of the optical signal having primarily the first selected wavelength.

8. (Withdrawn) The router of Claim 1, the switching enhancer comprises a plurality of tunable optical transmitters associated with a single input optical link to the router and operable to generate at a selected wavelength one of the optical signals for transmission to the star switching fabric; and

wherein at least one of the plurality of tunable filters is operable to reconfigure without emitting light while another of the tunable filters generates a signal for transmission to the star switching fabric.

9. (Withdrawn) The router of Claim 8, wherein the plurality of optical transmitters comprises:

a first optical transmitter operable to generate an optical signal at a first selected wavelength; and

a second optical transmitter operable to substantially complete tuning to a second selected wavelength before the first optical transmitter completes generation of the optical signal at the first selected wavelength.

10. (Withdrawn) The router of Claim 1, wherein each of the optical signals received at the star switching fabric comprises an identifier associated with its associated payload, and wherein the associated payload is stored in a memory while the optical signal traverses the star switching fabric.

11. (Withdrawn) The router of Claim 1, wherein each optical signal carries its associated payload.

12. (Withdrawn) The router of Claim 1, wherein:

at least some of the optical signals received at the star switching fabric comprise signals generated at ones of the plurality of line cards as a result of electrical to optical signal conversions; and

at least some of the optical signals received at the star switching fabric comprise express lane signals received from optical links bypassing the plurality of line cards.

13. (Withdrawn) The router of Claim 1, wherein each of the plurality of substantially similar sets of the optical signals comprises all of the optical signals received at the star switching fabric.

14. (Withdrawn) The router of Claim 1, wherein the configuration speed of each of the plurality tunable filters comprises less than 10 microseconds.

15. (Withdrawn) The router of Claim 1, wherein the configuration speed of each of the plurality tunable filters comprises less than 1 microsecond.

16. (Withdrawn) The router of Claim 1, wherein the configuration speed of each of the plurality tunable filters comprises less than 100 nanoseconds.

17. (Withdrawn) The router of Claim 1, wherein some of the plurality of tunable filters are associated with ones of the plurality of line cards and wherein at least one of the plurality of tunable filters is associated with an express lane bypassing all of the plurality of line cards.

18. (Withdrawn) The router of Claim 1, wherein at least one of the line cards comprises a look up table operable to facilitate electronic processing of at least an identifier portion of a packet received by the line card, the electronic processing facilitating generation of an optical signal for transmission to the star switching fabric.

19. (Withdrawn) The router of Claim 18, wherein the packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

20. (Withdrawn) The router of Claim 18, wherein the packet comprises a Multi Protocol Label Switching (MPLS) or a Generalized Multi Protocol Label Switching (GMPLS) packet.

21. (Withdrawn) The router of Claim 1, wherein the router is operable to facilitate multicast or broadcast operation by tuning multiple of the plurality of tunable filters to the same selected wavelength.

22. (Withdrawn) A router, comprising:

a star switching fabric operable to receive a plurality of optical signals each having a wavelength and to communicate from the switching fabric a plurality of substantially similar sets of the optical signals; and

a plurality of tunable filters associated with a single output optical link and operable to receive one of the sets of optical signals from the star switching fabric, wherein at least one of the plurality of tunable filters is operable to tune to a specified wavelength while another of the plurality of tunable filters processes a signal received from the star switching fabric having primarily a different wavelength from the specified wavelength.

23. (Withdrawn) The router of Claim 22, wherein the plurality of tunable filters comprises:

a first tunable filter tuned to a first selected wavelength and operable to process an optical signal having primarily the first selected wavelength; and

a second tunable filter operable to tune to a second selected wavelength while the first tunable filter processes the optical signal having primarily the first selected wavelength.

24. (Withdrawn) The router of Claim 22, wherein each of the plurality of substantially similar sets of the optical signals comprises all of the optical signals received at the star switching fabric.

25. (Withdrawn) The router of Claim 22, wherein some of the plurality of tunable filters are associated with ones of a plurality of line cards within the router and wherein at least one of the plurality of tunable filters is associated with an express lane bypassing all of the plurality of line cards.

26. (Withdrawn) The router of Claim 22, wherein at least some of the plurality of optical signals comprise aggregated frames formed within the router, wherein each aggregated frame comprises a plurality of packets bound for a common destination element external to the router.

27. (Withdrawn) The router of Claim 22, wherein at least one of the plurality of optical signals received by the star switching fabric comprises a shortened duration, and further comprising:

an optical transmitter operable to receive an electrical signal representing a packet received by the router having an original duration longer than the shortened duration, the optical transmitter operable to generate based on the electrical signal an optical signal having the shortened duration for transmission to the star switching fabric.

28. (Withdrawn) The router of Claim 22, wherein at least one of the plurality of tunable filters comprises a Fabry Perot based interferometric device.

29. (Withdrawn) The router of Claim 22, wherein at least one of the plurality of tunable filters comprises a micro electromechanical switching (MEMS) device.

30. (Withdrawn) The router of Claim 22, wherein the configuration speed of each of the plurality tunable filters comprises less than 10 microseconds.

31. (Withdrawn) The router of Claim 22, wherein the configuration speed of each of the plurality tunable filters comprises less than 1 microsecond.

32. (Withdrawn) The router of Claim 22, wherein the configuration speed of each of the plurality tunable filters comprises less than 100 nanoseconds.

33. (Withdrawn) The router of Claim 22, further comprising a switch operable to receive signals from outputs of each of the plurality of tunable filters and to select one of the signals received for communication toward a destination element associated with the signal received.

34. (Withdrawn) The router of Claim 22, wherein the second tunable filter is operable to substantially complete tuning to the second selected wavelength before the first tunable filter completes processing of the optical signal having primarily the first selected wavelength.

35. (Withdrawn) A router, comprising:

a plurality of groups of tunable optical transmitters, each group associated with a separate input optical link to the router and operable to generate at a selected wavelength an optical router signal, wherein at least one of the groups of optical transmitters comprises a first tunable transmitter operable to reconfigure without emitting light while a second of the tunable filters generates a signal for transmission; and

a star switching fabric operable to receive an optical router signal from each of the plurality of groups of tunable optical transmitters and to communicate a substantially similar set of at least some of the optical router signals to each of a plurality of filters, each filter associated with a specified wavelength and one of a plurality of output optical links from the router, each filter operable to communicate from the star switching fabric to its associated output link an optical signal comprising the wavelength associated with that filter.

36. (Withdrawn) The router of Claim 35, wherein the at least one group of tunable filters comprises:

a first optical transmitter operable to generate an optical signal at a first selected wavelength; and

a second optical transmitter operable to tune to a second selected wavelength without emitting light while the first optical transmitter generates the optical signal at the first selected wavelength.

37. (Withdrawn) The router of Claim 36, wherein the second optical transmitter is operable to substantially complete tuning to the second selected wavelength before the first optical transmitter completes generation of the optical signal at the first selected wavelength.

38. (Withdrawn) The router of Claim 35, wherein each of the plurality of substantially similar sets of the optical router signals comprises all of the optical router signals received at the star switching fabric.

39. (Withdrawn) The router of Claim 35, wherein each of the plurality of tunable optical transmitters is associated with one of a plurality of line cards within the router and wherein the star switching fabric receives optical router signals from the optical transmitters and at least one express lane optical signal from an express lane bypassing the line cards within the router.

40. (Withdrawn) The router of Claim 35, wherein at least some of the plurality of optical signals comprise aggregated frames formed within the router, wherein each aggregated frame comprises a plurality of packets bound for a common destination element external to the router.

41. (Withdrawn) The router of Claim 35, wherein at least one of the plurality of optical signals received by the star switching fabric comprises a shortened duration, and further comprising:

an optical transmitter operable to receive an electrical signal representing a packet received by the router having an original duration longer than the shortened duration, the optical transmitter operable to generate based on the electrical signal an optical signal having the shortened duration for transmission to the star switching fabric.

42. (Withdrawn) The router of Claim 35, further comprising a switch operable to receive signals from each of the plurality of tunable optical transmitters and to select one of the signals received for communication toward the star switching fabric.

43. (Withdrawn) A router comprising:

a plurality of line cards each operable to receive a plurality of packets each comprising an identifier associated with a destination element external to the router, each line card comprising an aggregator operable to combine at least some of a plurality of packets associated with a common destination element into an aggregated frame;

a plurality of optical transmitters each associated with one of the line cards and operable to generate at a specified wavelength an optical router signal comprising at least a portion of an aggregated frame generated by the associated line card; and

a star switching fabric operable to receive a plurality of optical router signals from the plurality of optical transmitters and to communicate a substantially similar set of optical router signals to each of a plurality of tunable filters, each tunable filter associated with a separate output link from the router and operable to selectively tune to a wavelength of one of the plurality of optical router signals to facilitate communication of an aggregated frame associated with that optical router signal toward the destination element associated with that aggregated frame.

44. (Withdrawn) The router of Claim 43, wherein each aggregated frame is formed by combining optical packets generated by one of the optical transmitters.

45. (Withdrawn) The router of Claim 44, wherein each of the packets received by one of the plurality of line cards comprises a first duration, and wherein each of the optical packets generated by one of the optical transmitters comprises a second duration shorter than the first duration.

46. (Withdrawn) The router of Claim 43, wherein each aggregated frame is initially formed from packets received at an input to the router and then reformed by one of the optical transmitters after at least a portion of the initially formed aggregated frame is converted to an electrical format for processing by the line card.

47. (Withdrawn) The router of Claim 43, wherein some of the plurality of tunable filters are associated with ones of the plurality of line cards and wherein at least one of the plurality of tunable filters is associated with an express lane bypassing all of the plurality of line cards.

48. (Withdrawn) A router comprising:

a plurality of line cards each operable to receive at least one packet having a first duration;

a plurality of optical transmitters each associated with one of the line cards and operable to generate at a specified wavelength an optical router signal comprising the packet received by the line card associated with that optical transmitter, wherein the packet in the optical router signal has a second duration shorter than the first duration;

a star switching fabric operable to receive a plurality of optical router signals from the plurality of optical transmitters and to communicate a substantially similar set of optical router signals to each of a plurality of tunable filters, each tunable filter associated with a separate output link from the router and operable to selectively tune to a wavelength of one of the plurality of optical router signals to facilitate communication of a packet associated with that optical router signal toward the destination element associated with that packet.

49. (Withdrawn) The router of Claim 48, wherein the second duration comprises one half or less of the first duration.

50. (Withdrawn) The router of Claim 48, wherein the optical transmitter comprises an external modulator operable modulate information onto an optical signal at an increased rate from a modulation rate associated with the packet having the first duration.

51. (Withdrawn) The router of Claim 48, wherein the optical transmitter comprises an integrated modulator operable modulate information onto an optical signal at an increased rate from a modulation rate associated with the packet having the first duration.

52. (Withdrawn) The router of Claim 48, wherein the integrated modulator comprises an electro absorbtion modulator.

53. (Withdrawn) The router of Claim 48, wherein some of the plurality of tunable filters are associated with ones of the plurality of line cards and wherein at least one of the plurality of tunable filters is associated with an express lane bypassing all of the plurality of line cards.

54. (Withdrawn) The router of Claim 48, wherein each of the plurality of line cards comprises an aggregator operable to combine a plurality of packets bound for a common destination element into an aggregated frame for transmission to the star switching fabric.

55. (Withdrawn) A router comprising:

an express lane operable to receive an express lane signal comprising an input wavelength signal having a wavelength associated with the express lane;

a switching fabric operable to receive the express lane signal and a plurality of optical router signals each comprising an optical signal having a wavelength different than the express lane signal and each resulting from at least a portion of and input wavelength signal being converted to an electrical signal and then converted back to an optical signal within the router;

wherein the switching fabric is operable to communicate the express lane signal and a plurality of optical router signals to each of a plurality of tunable filters, wherein each tunable filter is associated with a separate output link from the router and is operable to selectively tune to a specified wavelength to facilitate communication of the express lane signal or an optical router signal toward its associated output link.

56. (Withdrawn) The router of Claim 55, wherein the express lane signal is communicated from an input to the router to an output from the router without converting the express lane signal to an electrical format.

57. (Withdrawn) The router of Claim 55, further comprising a wavelength division multiplexer operable to:

receive a multiple wavelength input signal from an optical link and to separate the multiple wavelength signal into a plurality of input wavelength signals; and

receive a plurality of optical signals from at least some of the plurality of tunable filters and to combine the plurality of optical signals into a multiple wavelength output signal.

58. (Currently Amended) A method of routing optical signals, comprising:

communicating to a star switching fabric a plurality of optical signals each having a wavelength;

communicating from the star switching fabric a plurality of substantially the same ~~similar~~ sets of the optical signals;

receiving one of the plurality of substantially the same ~~similar~~ sets of optical signals at a plurality of tunable filters associated with a single output link from a router;

processing one of the optical signals received having primarily a first wavelength using a first tunable filter of the plurality of tunable filters tuned to the first wavelength;

tuning a second tunable filter of the plurality of tunable filters to a second wavelength while the first tunable filter processes the optical signal having primarily the first wavelength; and

communicating the optical signal having primarily the first wavelength toward the output link associated with the plurality of tunable filters.

59. (Original) The method of Claim 58, wherein tuning a second tunable filter of the plurality of tunable filters to a second wavelength comprises at least substantially completing tuning of the second filter before the first filter completes processing of the optical signal having primarily the first wavelength.

60. (Original) The method of Claim 58, wherein processing one of the optical signals received having primarily a first wavelength comprises:

substantially communicating the optical signal having primarily the first wavelength; and

substantially rejecting optical signals received from the star switching fabric having primarily wavelengths other than the first wavelength.

61. (Currently Amended) The method of Claim 58, further comprising:

after processing the optical signal having primarily the first wavelength, receiving another set of substantially the same ~~similar~~ optical signals; and

processing one of the another set of optical signals received having primarily the second wavelength using the second tunable filter of the plurality of tunable filters tuned to the second wavelength.

62. (Currently Amended) A method of routing optical signals in a router having a plurality of groups of tunable optical transmitters, each group associated with a separate input to the router, the method comprising:

at a first tunable optical transmitter tuned to a first wavelength and associated with a first input link to the router, generating an optical router signal having primarily the first wavelength;

tuning a second tunable optical transmitter associated with the first input link to a second wavelength without emitting light while the first optical transmitter generates the optical router signal having primarily the first wavelength; and

communicating an optical router signal from each group of tunable optical transmitters to a star switching fabric operable to communicate substantially the same ~~similar~~ sets of optical router signals to each of a plurality of filters each tuned to a separate wavelength and each associated with an output link from the router.

63. (Original) The method of Claim 62, wherein tuning a second tunable optical transmitter to a second wavelength comprises at least substantially completing tuning of the second optical transmitter before the first optical transmitter completes generation of the optical router signal having primarily the first wavelength.

64. (Original) The method of Claim 62, further comprising:

after generating the optical router signal having primarily the first wavelength at the first optical transmitter, generating an optical router signal having primarily a second wavelength at the second optical transmitter tuned to the second wavelength.

65. (Previously Presented) In a router comprising a plurality of line cards coupled to a star switching fabric, a method of routing optical signals, comprising:

receiving at a first line card a first optical packet comprising a payload and having a first duration;

generating, based on the first packet, an optical router packet comprising the payload and having a second duration shorter than the first duration, the optical router packet having a first wavelength;

communicating the optical router packet to a star switching fabric;

communicating the optical router packet from the star switching fabric to each of a plurality of tunable filters each associated with a separate output link from the router; and

communicating a control signal to at least a selected tunable filter associated with a communication path to a destination element, the control signal operable to cause the selected tunable filter to accept the optical router packet and to facilitate communicating at least the payload of the optical router packet toward the destination element.

66. (Original) The method of Claim 65, further comprising:

receiving the optical router packet from the selected tunable filter;

generating an output optical packet comprising the payload and having the first duration; and

communicating the output optical packet from the router toward the destination element.

67. (Cancelled)

68. (Previously Presented) In a router comprising a plurality of line cards coupled to a star switching fabric, a method of routing optical signals, comprising:

receiving at a first line card a plurality of optical packets each comprising a payload and a first identifier of a common destination element;

generating at the first line card an aggregated frame by encapsulating the plurality of optical packets with a second identifier of the common destination element, the aggregated frame comprising at least the payloads of each of the plurality of optical packets having the first identifier of the common destination element;

communicating the aggregated frame to a star switching fabric;

communicating the aggregated frame from the star switching fabric to each of a plurality of tunable filters each associated with a separate output link from the router; and

communicating a control signal to at least a selected tunable filter associated with a communication path to the destination element, the control signal operable to cause the selected tunable filter to accept the aggregated frame and to facilitate communicating at least the payloads of the aggregated frame toward the common destination element.

69. (Original) The method of Claim 68, further comprising:

receiving the aggregated frame from the selected tunable filter;

generating from the aggregated frame a plurality of output optical packets each comprising one of the payloads of the input optical packets and an identifier of the destination element; and

communicating the plurality of output optical packets from the router toward the destination element.

70. (Cancelled)

71. (Previously Presented) In a network comprising a plurality of line cards coupled to a star communication fabric, a method of transmitting optical signals, comprising:

receiving at a first line card a plurality of optical packets each comprising a payload and an identifier of a common destination element;

generating at the first line card an aggregated frame by encapsulating the plurality of optical packets with a second identifier of the common destination element, the aggregated frame comprising at least some of the plurality of optical packets, each of the at least some of the plurality of optical packets having the identifier of the common destination element;

communicating the aggregated frame to a star communication fabric;

communicating the aggregated frame from the star communication fabric to each of a plurality of filters each associated with a separate output link from the network;

communicating a control signal to at least a first filter associated with a communication path to a destination element, the control signal operable to cause the selected filter to accept the aggregated frame and to facilitate communicating at least the payloads of at least some of the aggregated frame toward the common destination element;

communicating a message from a transmitter at the common destination element to the star communication fabric; and

communicating at least a portion of the message from the star communication fabric to a second filter associated with a communication path to the first line card, wherein the second filter accepts the message and facilitates communicating the portion of the message to the first line card.

72. (Previously Presented) The method of Claim 71, wherein the star communication fabric comprises one or more power splitters.

73. (Previously Presented) The method of Claim 72, wherein the one or more power splitters separate an input optical signal into sixteen (16) or more outgoing signals.

74. (Previously Presented) The method of Claim 71, wherein the first line card comprises a plurality of transmitters and wherein each transmitter communicates a different center wavelength.

75. (Previously Presented) The method of Claim 74, further comprising an optical amplifier operable to amplify at least one of the wavelengths from the plurality of transmitters.

76. (Previously Presented) The method of Claim 71, wherein the destination element comprises a plurality of receivers.

77. (Previously Presented) The method of Claim 71, wherein at least some of the plurality of filters are tunable filters.

78. (Previously Presented) The method of Claim 71, wherein the aggregated frame is a time-division multiplexed frame.

79. (Previously Presented) The method of Claim 71, wherein at least some of the plurality of optical packets comprise an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

80. (Previously Presented) The method of Claim 71, wherein the control signal is based on a round robin scheduling algorithm.

81. (Previously Presented) The method of Claim 71, wherein generating the aggregate frame comprises:

combining at least some of the plurality of optical packets into an initial aggregated frame;

converting at least some of the initial aggregated from to an electrical format for processing by the first line card; and

using one or more optical transmitters of the first line card, generating the aggregated frame based at least in part on the electrical format.

82. (Previously Presented) The method of Claim 71, wherein generating the aggregate frame comprises combining one or more of the plurality of optical packets that are each bound for the common destination element into the aggregated frame for transmission to the star switching fabric.

83. (Previously Presented) In a network comprising a plurality of line cards coupled to a star communication fabric, a method of transmitting optical signals, comprising:

receiving at a first line card a first packet comprising a payload and having a first duration;

generating, based at least in part on the first packet, an optical network packet comprising the payload and having a second duration shorter than the first duration, the optical network packet having a first wavelength;

communicating the optical network packet to a star communication fabric;

communicating the optical network packet from the star communication fabric to each of a plurality of filters each associated with a separate output link from the network;

communicating a control signal to at least a first filter associated with a communication path to a destination element, the control signal operable to cause the selected filter to accept the optical network packet and to facilitate communicating at least the payload of the optical network packet toward the destination element;

communicating a message from a transmitter at the destination element to the star communication fabric, the message having a second wavelength; and

communicating at least a portion of the message from the star communication fabric to a second filter associated with a communication path to the first line card, wherein the second filter accepts the message and facilitates communicating the portion of the message to the first line card.

84. (Currently Amended) The method of Claim 83, ~~Claim 68,~~ wherein the star communication ~~switching~~ fabric comprises one or more power splitters.

85. (Previously Presented) The method of Claim 84, wherein the one or more power splitters separate an input optical signal into sixteen (16) or more outgoing signals.

86. (Currently Amended) The method of Claim 83, ~~Claim 68,~~ wherein the first line card comprises a plurality of transmitters and wherein each transmitter communicates a different center wavelength.

87. (Previously Presented) The method of Claim 86, further comprising an optical amplifier operable to amplify at least one of the wavelengths from the plurality of transmitters.

88. (Currently Amended) The method of Claim 83, ~~Claim 68,~~ wherein the destination element comprises a plurality of receivers.

89. (Previously Presented) The method of Claim 68, wherein the aggregated frame is a time-division multiplexed frame.

90. (Currently Amended) The method of Claim 83, ~~Claim 68,~~ wherein ~~at least some of the plurality of optical packets comprise~~ the optical network packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

91. (Currently Amended) The method of Claim 83, ~~Claim 68,~~ wherein the control signal is based on a round robin scheduling algorithm.